

2017 ANNUAL MANAGEMENT PLAN

Port Armstrong Hatchery

Armstrong-Keta, Inc.

This plan remains in effect until superseded by the next year's annual management plan (AMP). The AMP serves as an instruction manual for hatchery operations and adult return management; it is incumbent upon the local ADF&G, and hatchery staff to share information with each other regularly for successful adherence to this plan. Anticipated departures from the plan should be communicated as soon as possible in the event an amendment is necessary. Unintended and unexpected changes should be disclosed immediately. The ADF&G Private Nonprofit (PNP) Coordinator will advise as to whether an amendment, exception report, or other action is warranted.

1.0 Executive Summary

1.1 Introduction

Port Armstrong Hatchery (PAH) is a PNP facility owned and operated by Armstrong-Keta, Inc. (AKI). The hatchery is located at the outlet of Jetty Lake, in Port Armstrong near the southeastern tip of Baranof Island along Chatham Strait (Figure 1). The hatchery is fed by water from two lakes perched 285 feet above the facility. Up to 30 cfs of water is seasonally available for hatchery use and hydropower generation. The hatchery facilities include a primary incubation building, a king and coho salmon building, freshwater raceways, and two saltwater net pen complexes.

PAH is currently producing pink, chum, and coho salmon, and is also permitted to rear king salmon. All fish are currently released at Port Armstrong. In addition, PAH has a pink salmon release site at Port Herbert and a chum salmon release site Port Lucy that have not been active. Fish from Port Armstrong contribute to common property fisheries in southern Chatham Strait and other areas of Southeast Alaska. PAH is located in a productive traditional troll fishery area, and seine fisheries exist immediately north and east of Port Armstrong. Salmon returning to Port Armstrong not harvested in common property fisheries are used for hatchery cost recovery and broodstock.

1.2 *New this year (production, harvest management, culture techniques, etc.)*

AKI believes that near shore predation on salmon fry is negatively impacting marine survival. In 2015 and 2016, AKI towed one differentially thermal marked cohort of PAH pink salmon fry into Chatham Strait for release, to avoid the narrow bottleneck at the entrance of Port Armstrong. In 2017, this release strategy will be repeated again, with six pens of pink salmon totaling approximately 26 million fry. However, movement of pens any distance more than 1-2 miles is difficult due to the typical water conditions, winds and tides in southern Chatham Strait.

Therefore, AKI will for the first time release 8.3 million pink fry offshore of the hatchery in southern Chatham Strait via a fry transport vessel. It is hoped this method will better ensure departure of the fry from the near-shore area, while still allowing them to home in on PAH water

signature in 2018. Fish will be reared in pens in PAH and ocean water pumped into the transport fish holds to ensure contact with the same water the fry would otherwise travel through on out-migration. This transport and release method is authorized by temporary FTP listed in Section 1.3.

In 2017, AKI will release 10 million pink salmon fry from Port Herbert. This will be the first release from the Port Herbert release site.

1.3 *New permits or permit amendments*

In 2017, we have added one new Fish Transport Permit, #17J-1010, permitting the use of a vessel to transport and release up to 20 million pink fry in 2017 and again in 2018 via the boat transport and release method discussed above

1.4 *Expected Returns*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery
Pink salmon, BY15	Port Armstrong	1,456,754	670,107	786,647	187,500	599,147
Coho salmon, BY14	Port Armstrong	153,481	76,741	76,740	6,000	70,740
King salmon, BY10-14	Port Armstrong	1,640	492	1,148	0	1,148
Chum salmon, BY11-14	Port Armstrong	377,751	37,775	339,976	60,000	279,976

Additional detail on adult salmon returns from PAH projects can be found in the appendices Table 1.

1.5 *Production Summary*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, Percent or Number Marked
Armstrong pink salmon; Tow out release	2016	May 1 - 5, 2017	26.16 million	Fed fry	100% TM 3H Chatham Tow Release
Armstrong pink salmon; Pt Herbert release	2016	April 29, 2017	10.09 million	Fed Fry	100% TM 3H3 and 3H6
Armstrong pink salmon; S. Chatham boat release	2016	April 28, 2017	8.345 million	Fed Fry	100% TM 3H5 Chatham vessel transfer release
Armstrong pink salmon; PAH release	2016	May 1, 2017	8.323 million	Fed Fry	100% TM 3H4 Port Armstrong inside release
Armstrong coho salmon	2015	May 15, 2017	2.095 million	Smolt	CWT, 7.8%
Armstrong chum salmon	2016	May 1, 2017	25.96 million	Fed fry	TM 100% 1,2,2H

In 2017, the egg-take goal at PAH will be 105 million pink salmon eggs, 60 million chum salmon eggs, 5 million coho salmon eggs, and zero king salmon eggs.

1.6 *Current Permitting*

The permitted capacity of PAH is 105 million pink salmon eggs, 60 million chum salmon eggs, and 5 million combined king and coho salmon eggs, (with no more than 2 million being king salmon eggs.)

2.0 **Late Summer Pink Salmon Production**

2.1 *Program details*

Since 1983, PAH has been producing pink salmon. PAH strives to annually release 97 million, 0.5 gram to 1.2 gram, otolith-marked pink salmon fry. The purpose of the program is to provide pink salmon to common property fisheries in Lower Chatham Strait, as well as provide sufficient pink salmon return to the hatchery to meet PAH cost-recovery and broodstock requirements.

Average marine survival of PAH pink salmon has been approximately 2.5%, with a high of 6.9% in return-year 1990 and a low of 0.12% in return-year 2008 (Table 2). In 2015, PAH began investigating the effects of release location on marine survival by towing a cohort of differentially marked pink salmon into Chatham Strait for release. In 2017, there will be four pink salmon release strategies: traditional rearing and release at PAH; traditional rearing at PAH with release in Chatham Strait; remote rearing and release from Port Herbert, and release via vessel transport of fed fry to lower Chatham Strait, approximately 10 miles from PAH. All 97 million brood year 2016 (BY16) pink salmon fry are differentially otolith marked, enabling comparative analysis of these various release strategies.

ADF&G has estimated that, on average, 44% of the PAH pink salmon return is harvested in the Lower Chatham seine fishery (district 109). This is an estimate made years ago by the Sitka and Petersburg ADF&G area management biologists based on review of historical catch records.

2.2 *Egg Takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong pink salmon	Sashin Creek	Port Armstrong Hatchery 109-10-002	P	105,000,000	105,000,000
Totals				105,000,000	105,000,000

2.3 *Broodstock capture method*

Pink salmon returning to the hatchery are an enhanced run. Sex ratios are sampled during the harvest to monitor run timing. Broodstock mature in the inner bay over the course of the run. In early September, when broodstock have sufficiently matured, two fish ladders are opened and adults are recruited into raceways. An electro-anesthesia unit attached to the raceways is used during egg take.

2.4 *Spawning*

Approximately 187,500 pink salmon will be required for broodstock. Spawning takes place on a covered deck adjacent to the broodstock raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected. The eggs are transported by hand cart to the incubation building, where fertilization and rinsing takes place. The fertilized eggs are loaded into R-48 bulk incubators for incubation to the eyed stage.

2.5 *Egg-take schedule*

Egg take typically begins around September 10 and lasts for two to three weeks, but may be extended due to run timing and pace of recruitment to the fish ladder. Egg take should approximate the normal run curve since broodstock will be allowed to accumulate at the mouth of the creek proportionally during the course of the run. Depending on the number of ripe females and fecundity, between 5 and 10 million eggs can be taken in a day.

2.6 *Carcass disposal*

The majority of carcasses are expected to be sold to processors. Those carcasses not sold are collected daily in a small barge. Carcasses may also be given away and/or sold as bait. All remaining carcasses are driven approximately one mile offshore and discarded in Chatham Strait.

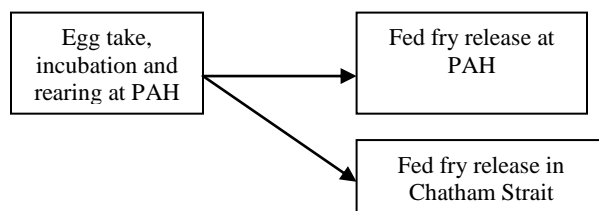
2.7 *Planned releases this calendar year of previous brood year's production*

See table 1.5 above

2.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
None					

2.9 *Operational diagram*



2.10 *Fish transport permits*

FTP #	Egg take, transport or release	Transport from → to	Maximal #, Life Stage	Expires
98J-1009	Egg take and release	PAH to PAH	105 million, eggs	1/31/25
15J-1014	Transport and release	PAH to Herbert	55 million eggs	12/31/20
15J-1015	Egg take, transport and release	Sashin Creek to PAH	105 million eggs	12/31/25
17J-1010	Transport and release	PAH to offshore of PAH	20 million fry	5/31/18

Egg take at Sashin Creek under 15J-1015 cannot commence until the ADF&G Division of Commercial Fisheries area management biologist has authorized it for that year. The escapement target for Sashin Creek is a peak aerial survey count of between 20,000 and 40,000 pink salmon. This includes fish above and below the weir site. The weir may be installed once a 20,000 pink salmon peak aerial survey count has been made. No hatchery broodstock may be collected until an estimated 20,000 fish are above the weir. Once 20,000 fish are estimated above the weir, 20% of the daily return may be collected for hatchery broodstock until an estimated 50,000 fish are above the weir. Once 50,000 fish are estimated above the weir, 50% of the daily return may be collected for hatchery broodstock until an estimated 100,000 fish are above the weir. Once 100,000 fish are estimated above the weir, 80% of the daily return may be collected for hatchery broodstock.

Permit 17J-1010 is a temporary experimental permit to allow two years of an alternative release strategy to determine if marine survival of PAH pink salmon can be improved by transporting fry out of the near-shore environment at time of release by a vessel. Fry will be reared in net pens at PAH per usual practice, but at time of release they will be transferred to a vessel which will transport them for around two hours to a point approximately 10 miles offshore at the mouth of Chatham Strait.

3.0 Fall Coho Salmon

3.1 Program details

The purpose of the program is to provide coho salmon to common property fisheries in Lower Chatham Strait and outer Baranof Island, as well as provide a sufficient coho salmon return to the hatchery to meet PAH cost recovery and broodstock requirements.

In 1988, PAH began its coho salmon program with broodstock taken from Blanchard Lake in Deep Cove. In 1989, broodstock was taken from Sashin Creek stock at the NSRAA Mist Cove site. In 2005, the permitted capacity of PAH coho salmon increased from 2 million to 3 million eggs. In 2007, the permitted capacity increased to a possible 5 million coho salmon eggs, if no king salmon eggs are collected (permitted capacity is 5 million combined king and coho salmon eggs with no more than 2 million being king salmon eggs). Coded wire tag (CWT) recoveries indicate the average contribution rate to the troll fishery is approximately 50% of the total PAH return. Overall marine survivals for BY88 through BY11 releases average 5.8% (Table 3). The highest marine survival was 23.6% (BY99) and the low was 1.45 % (BY02). Bacterial kidney disease (BKD) is managed by strict family tracking with culling of positive families prior to hatching, isolation between brood years and stocks, and early diagnosis and possible treatment.

Fish are also being fed Aqua 100 at fry stage as a BKD preventative. PAH strives to annually release at least 4.0 million, 25 to 50 gram coho salmon smolt, maintain a green egg to smolt survival rate over 80%, maintain marine survivals comparable to, or exceeding, those experienced at Hidden Falls and Mist Cove, and maintain a fishery contribution rate of 50% or higher.

Approximately 86,500 BY15 coho salmon smolt were tagged. These tags are to be recovered by ADF&G during port sampling of the troll and sport fishery and by AKI at the hatchery rack during spawning. PAH will continue to CWT coho salmon at ADF&G approved tag rates.

3.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary (P) or (A) Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong coho salmon	Deep Cove/Sashin Creek	Port Armstrong Hatchery 109-10-002	P	5,000,000	5,000,000 ¹
Armstrong coho salmon	Deep Cove/Sashin Creek	Hidden Falls Hatchery	A	None	3,000,000
Species/ Run Totals				5,000,000	5,000,000

¹Five million combined king and coho salmon eggs, with no more than two million being king salmon eggs.

3.3 *Broodstock capture method*

Coho salmon returning to the hatchery are enhanced fish. In October, two fish ladders are opened and adult coho salmon are recruited into several holding raceways. Males and females are monitored for the next several weeks for ripeness.

3.4 *Spawning*

Approximately 6,000 adults are required for broodstock. Spawning takes place on a covered deck adjacent to the broodstock raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected and transported to the coho and king salmon incubation building. Initial incubation takes place in Heath tray incubators. Iodophor is used to disinfect eggs. Family tracking is used and eggs are culled from parents identified to be BKD-positive.

3.5 *Egg-take schedule*

Egg take usually occurs between late October and early November, over a one to two week period, as females ripen. Eggs will be taken in lots of approximately 500,000, or greater, until the egg-take goal has been reached. In the event that sufficient broodstock is not available at PAH, additional eggs may be taken at HFH.

3.6 Carcass disposal

Carcasses are sold to processors when possible. Carcasses that are not sold are collected in a small barge and made available to local residents or fishermen for bait. Any remaining carcasses are disposed of in Chatham Strait, approximately one mile offshore.

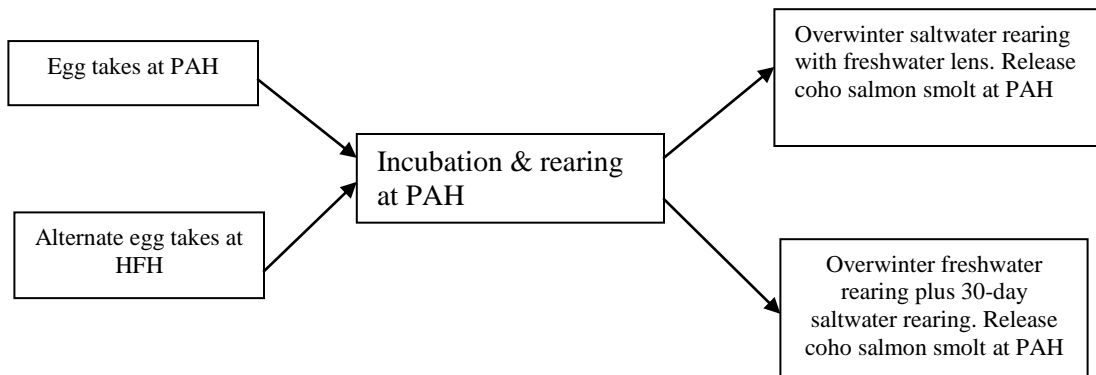
3.7 Planned releases this calendar year of previous brood years' production

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, Number Marked
Armstrong coho salmon	2015	5/15/17	2,095,217	smolt	CWT: 86,500

3.8 Previous brood years that will remain in culture during the entire calendar year

Program Name	Brood Year	Number Live	Life Stage	Type of Mark, Number Marked	Number to Release, Date
Armstrong coho salmon	2016	4,164,860	fry	CWT Summer '16	4 million, May 2018

3.9 Operational diagram



3.10 Fish transport permits

FTP #	Egg take, transport, or release	Trans. From → To	Maximal #, Life Stage	Expires
98J-1010	Egg take and release	PAH to PAH	5,000,000 eggs ¹	8/31/25
93J-1036	Egg take, Transport and release	HFH to PAH	3,000,000 eggs	8/31/25

¹Total not to exceed 5 million eggs when combined with king salmon eggs from 01J-1005, which limits king salmon egg take to 2 million eggs.

4.0 Spring king salmon

4.1 Program details

In 2001, PAH began a king salmon broodstock program utilizing the Unuk River king salmon stock from LPW. The purpose of the program is to provide increased opportunity for common property harvest of king salmon in Lower Chatham Strait, as well as provide a sufficient king salmon return to the hatchery to meet PAH cost-recovery and broodstock requirements. In 2005, the first adult king salmon returned to PAH. In 2006, PAH conducted its first king salmon egg take. PAH initiated a zero-check program beginning with BY06. For this program, a portion of the eggs are incubated in warmer water, ponded early, and reared in indoor tanks. A minimum of 30,000 fish from this release group will be given a CWT (per ADF&G guidelines) and transferred to saltwater pens in May for short-term rearing, then released in late May at approximately 14 grams. The purpose of the zero-check program is to increase king salmon production at PAH while keeping production costs manageable. The remaining king salmon are incubated in colder water and reared in a traditional one-check program. Fry are reared in freshwater raceways and then transferred to a saltwater net pen for overwinter rearing, and released the following May. A minimum of 30,000 fish from this release group will be given a CWT (per ADF&G guidelines). The target release size of one-check smolt is 25 to 40 grams. The smolt release is timed to coincide with LPW king salmon releases. PAH strives to annually release 140,000 25 to 40 gram king salmon smolt and 120,000 14 gram zero-check king salmon. PAH strives to maintain a green egg to smolt survival rate above 80%, although in some years extra eggs are culled when survivals exceed anticipated percentages, resulting in reported survivals lower than actual rates.

AKI will CWT and adipose fin-clip king salmon released from PAH per ADF&G requirements. CWT recoveries will be used to evaluate PAH common property contributions and survival rates. ADF&G personnel recover CWTs while sampling the commercial troll and sport fisheries. PAH employees also recover CWTs during egg take. Additional information on PAH king salmon survival can be found in the appendices (Table 4).

In 2016, all BY15 king salmon eggs were used in the zero-check program, and no traditional one-check smolt were produced. Smolt were released by June 30, 2016. The king salmon program has been suspended until such time that AKI can financially justify continuation. No king salmon eggs were taken in 2016. In 2017, PAH will not release any king salmon and will not take any king salmon eggs.

4.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	(P) Primary or (A) Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong king salmon	Unuk River	Little Port Walter	A	0	2,000,000
Armstrong king salmon	Unuk River	Port Armstrong Hatchery 109-10-002	P	0	2,000,000
Armstrong king salmon	Unuk River	Deer Mountain Hatchery	A	0	2,000,000
Species/ Run Totals				0	2,000,000

4.3 *Broodstock capture method*

King salmon returning to the hatchery are enhanced fish. Over the course of the run, broodstock enter the inner bay and mature. In mid-July, two fish ladders are opened and adults are recruited into several holding raceways. Males and females are monitored for ripeness. Little Port Walter research facility, located five miles north of PAH, is a backup egg source for Unuk River stock king salmon eggs.

4.4 *Spawning*

To achieve full production of 2 million eggs, approximately 100 adults are required for broodstock. Spawning takes place on a covered deck adjacent to the broodstock raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are transported to the coho and king salmon incubation building. Initial incubation takes place in Heath tray incubators. Iodophor is used to disinfect eggs. Family tracking is used, and eggs are culled from BKD-positive parents.

4.5 *Egg-take schedule*

Egg take usually occurs in late-July or early-August, over a period of one to two weeks as females ripen. Eggs are taken in lots of approximately 250,000, or greater, until the egg-take goal is reached. If sufficient broodstock is not available at PAH, additional eggs may be taken at LPW. Gametes will be shipped in separate containers to PAH for fertilization and incubation.

4.6 *Carcass disposal*

Carcasses are sold to a processor when possible. Carcasses that are not sold are collected in a small barge and made available to local fishermen for bait. Any remaining carcasses are disposed of in Chatham Strait, approximately one mile offshore.

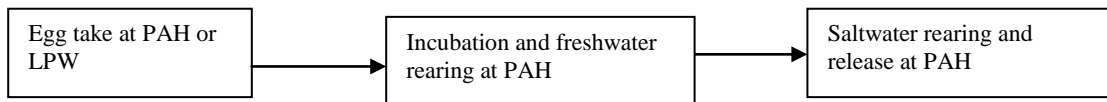
4.7 *Planned releases this calendar year of previous brood years' production.*

No previous broodyear fish available for release (see section 4.1)

4.8 *Previous brood years that will remain in culture during the entire calendar year.*

Program Name	Brood Year	Number Live	Life Stage	Type of Mark, # to Mark	Number to Release, Date
Armstrong king salmon	N/A	-	-	-	-

4.9 *Operational diagram*



4.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Trans. From → To	Maximal #, Life Stage	Expires
01J-1005	Egg take, transport, and release	LPW to PAH	2,000,000 eggs	9/30/25
11J-1004	Egg take, transport, and release	PAH to PAH	2,000,000 eggs	12/31/25

5.0 Summer chum salmon

5.1 *Program details*

In 2003, PAH began its summer chum salmon program utilizing the enhanced chum salmon stock from GCH and HFH. The purpose of the program is to establish a chum salmon return at PAH that will provide opportunities for common property harvest of chum salmon in Lower Chatham Strait, as well as broodstock and cost recovery fish for PAH. Since 2009, a full complement of chum salmon year-classes has returned to PAH. It is anticipated that all future egg-take goals will be achieved from returns to PAH. In 2015, permitted chum salmon production at PAH increased from 30 million to 60 million green eggs, and a permitted remote release site was added at Port Lucy. The production goal is to annually release over 55 million 2.0 gram thermal marked chum salmon fry from both Port Armstrong and from Port Lucy, once the program is at full production. Chum salmon will be released from each location as a single group, near the beginning of May. PAH strives to maintain a green egg to fry survival rate above 90%.

AKI thermally marks 100% of the chum salmon incubated at PAH.

5.2 *Egg takes*

Program Name	Ancestral Stock(s)	Egg-Take Site, Stat Area	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Armstrong chum salmon	HFH	PAH, 109-10-002	P	60,000,000	60,000,000
Armstrong chum salmon	HFH		A	30,000,000	30,000,000
Armstrong chum salmon	HFH	HFH	A	30,000,000	30,000,000
Species/ Run Totals				60,000,000	60,000,000

5.3 *Broodstock capture method*

Returning chum salmon are from an enhanced run. Sex ratios will be sampled during the harvest to monitor run timing. In late-July, when broodstock have sufficiently matured, three fish ladders are opened and adults recruit into raceways. An electro-anesthesia unit, attached to the raceways, is used during egg take.

5.4 *Spawning*

Approximately 60,000 chum salmon will be required for broodstock. Additional broodstock may be required if eggs are taken for HFH. Spawning takes place on a covered deck adjacent to the brood raceways. After being stunned with an electro-anesthesia unit, males and females are sorted and their gametes are collected. The eggs are transported by handcart to the incubation building, where fertilization and rinsing takes place. The fertilized eggs are loaded into R48 bulk incubators for incubation to the eyed stage.

5.5 *Egg-take schedule*

Egg take generally begins around the end of July, and lasts for one to two weeks; however, it may be extended depending on run timing and pace of recruitment into the fish ladder. Between 3 and 6 million eggs can be taken in a day, depending on the number of ripe females available and their fecundities.

5.6 *Carcass disposal*

The majority of carcasses will be sold to processors. Those carcasses not sold are collected daily in a small barge. Carcasses may also be given away and/or sold as bait. All remaining carcasses are driven approximately one mile offshore and discarded in Chatham Strait.

5.7 *Planned releases this calendar year of previous brood years' production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Armstrong chum salmon	BY16	5/1/16	26 million	Fed Fry	TM 100%

5.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
None					

5.9 *Operational diagram*

Egg take, incubation, rearing, and release at PAH

5.10 *Fish transport permits*

FTP #	Egg take, transport, or release	Transport from → to	Maximal #, Life Stage	Expires
06J-1011	Egg take and release	PAH to PAH	60,000,000 eggs	12/31/2025
03J-1009	Transport, and release	HFH to PAH	30,000,000 eggs	11/01/2022
15J-1016	Transport and release	PAH to Port Lucy	30,000,000 eggs	12/31/2025

6.0 HARVEST MANAGEMENT

6.1 *Special harvest area*

Described in **5 AAC 40.081 District 9: Port Armstrong Special Harvest Area.**

The AKI Special Harvest Area (SHA) for king salmon is defined in regulation as the waters of Port Armstrong west of 134°39.47' W. longitude and is open for harvest by the hatchery permit holder beginning April 15. The SHA for chum, pink, and coho salmon includes the waters of Port Armstrong Bay enclosed by a line from Point Eliza at 56°17.73' N. latitude, 134°38.75' W. longitude to a point on the Baranof Island shoreline at 56°17.98' N. latitude, 134°38.35' W. longitude (Figure 1 and Figure 3) and is open to harvest to the hatchery permit holder from June 15 through October 31. This area will be closed to common property commercial fishing by regulation from July 31 through September 30, unless opened by emergency order (EO) to

harvest salmon surplus to cost recovery and broodstock needs, or for continued trolling by request of PAH.

Sport fishing will be open in the SHA. Sport fisheries will be managed by regional sport fishing regulations in effect for the Port Armstrong SHA. If necessary to protect broodstock, sport fishing may be closed by EO. If the number of king salmon returning to the SHA is expected to exceed broodstock needs, the sport fish bag and possession limit may be increased.

6.2 *Projected return this year*

Species, run	Program Name	Projected Common Property Harvest	Other ¹	Total Projected Return, Current Year
Pink salmon BY 15	Port Armstrong	670,107	786,647	1,456,754
Coho salmon BY 14	Port Armstrong	76,741	76,741	153,481
Chum salmon BY 11-14	Port Armstrong	37,775	339,976	377,751
King salmon BY 10-15	Port Armstrong	492	1,148	1,640

¹Other includes broodstock, cost recovery, escapement, etc.

6.3 Common property fisheries management:

Commercial fisheries

King Salmon

In 2017, PAH is expecting about 1,640 adult king salmon to return. (2016 Annual Report Schedule D figure of 1,509 was based on an erroneous spreadsheet formula.) PAH king salmon will be caught in the traditional summer troll season in the outer coastal waters and Lower Chatham Strait. An estimated 20% to 40% of these fish will be harvested in common property fisheries.

Chum Salmon

In 2017, PAH is expecting approximately 377,751 adult chum salmon to return at 1.5% ocean survival. The ancestral stock is HFH chum salmon, which return in July. If PAH chum salmon return through Lower Chatham Strait, very few will be harvested in traditional purse seine fisheries, since Lower Chatham Strait purse seine fisheries do not occur until August. Conversely, if PAH chum salmon enter inside waters through Cross Sound, harvest would be expected in traditional seine fisheries in northern Chatham Strait and the Hidden Falls THA. Traditional troll fisheries allow good access to PAH chum salmon. All chum salmon returning to the SHA in excess of broodstock requirements will be harvested for cost recovery by PAH. Common property openings targeting PAH chum salmon are not anticipated in the SHA; however, the outer bay portion of the SHA may be kept open for troll access when the inner bay is closed. Though unlikely, common property openings may be necessary to harvest surplus fish in the SHA if cost-recovery harvesting is overwhelmed. PAH will maintain close contact with the Sitka Area ADF&G management staff throughout the return so the department can respond to unharvested surplus fish in a timely manner, should the need arise. PAH may request the outer bay be closed if broodstock collection or cost recovery falls below projection.

Pink Salmon

In 2017, we predict a return of approximately 1.45 million adult pink salmon at 1.5% ocean survival. All pink salmon returning to the SHA in excess of broodstock requirements will be harvested by PAH for cost recovery. No common property openings targeting PAH pink salmon are anticipated in the SHA. Though unlikely, common property openings may be necessary to harvest surplus fish in the SHA if cost-recovery harvesting is overwhelmed. PAH will maintain close contact with the Sitka Area ADF&G management staff throughout the return so the department can respond to unharvested surplus in a timely manner, should the need arise.

Wild stock run timing in the most southerly portions of sections 9-A and 9-B overlaps with the run timing of returning PAH pink salmon; therefore, a significant interception of pink salmon returning to PAH would be expected in these fisheries during mid to late August. Opportunities for traditional purse seine fisheries in the southern portions of sections 9-A and 9-B will be determined in season based on observations and abundance. In Section 9-A, traditional purse seine fisheries occur north of Armstrong Point. In recent years, few if any common property openings for seining have occurred south of Red Bluff Bay.

Coho Salmon

In 2017, PAH is expecting a return of about 153,481 adult coho salmon at 7% ocean survival. PAH coho salmon are mostly harvested in the traditional summer troll season in the outer coastal waters and in Lower Chatham Strait. It is estimated that 50% of PAH coho salmon will be harvested in the common property fisheries. All coho salmon returning to the SHA in excess of broodstock requirements will be harvested for cost recovery by PAH.

6.4 Cost recovery harvest management:

Species	CR goal¹
King salmon	All king salmon in terminal area.
Chum salmon	All chum salmon in terminal area.
Pink salmon	All pink salmon in terminal area.
Coho salmon	All coho salmon in terminal area.

Pink salmon run timing is monitored via daily sex ratio sampling during the harvest activities. Initially, the early portion of the pink salmon return is managed to provide the highest quality flesh condition, as the preponderance of these fish are excess males. As the run progresses and more females begin to account for a larger share of the return, management emphasis may turn to harvesting strategies aimed at maximum roe value, with flesh quality being secondary. As a general practice, PAH and its contracted harvester will strive to keep the outer portion of the SHA fully harvested each day in order to minimize any potential straying. PAH anticipates 600,000 pink salmon to be available for cost recovery, not counting fish that are lost to sea lion predation in and immediately in front of our SHA. Sufficient processing and tendering capabilities will be contracted to handle daily harvest amounts of nearly 800,000 lbs. if necessary.

PAH intends to use a gillnetter during May and June for cost recovery of returning king salmon. The gillnetter will use a driftnet of 6" or greater mesh size in the inner bay and attempt to harvest kings as quickly as possible as they return in order to maximize quality and take advantage of the higher early-season prices.

In 2017, PAH anticipates a return of 280,000 chum salmon to be available for cost recovery in the SHA, again not counting sea lion predation. Chum salmon should make a significant contribution to PAH's cost-recovery harvest. The chum salmon run generally ends before the end of July, one to two weeks before the pink salmon harvest begins. PAH plans to contract a seiner to fish at least twice a week, to keep the SHA fully harvested.


Based on historical catch data, PAH anticipates that approximately 50% of returning coho salmon will be captured in the traditional summer troll fishery in the outer coastal waters of Baranof Island and Lower Chatham Strait. Adult coho salmon not caught in common property fisheries typically begin arriving in the SHA in late August. The coho salmon return may overlap slightly with the end of the pink salmon return. If requested by the processor, efforts may be made to harvest coho salmon and pink salmon separately. Coho salmon often completely segregate themselves from pink salmon within the inner bay. Definitive coho salmon harvest strategies may vary with changing conditions and different fish behavior.

7.0 ADDITIONAL INFORMATION


None.

8.0 APPROVAL

Recommendation for Approval: Port Armstrong Hatchery Annual Management Plan, 2017



Ian Fisk, Armstrong-Keta, Inc. 5/18/17
Date




Troy Tydingco, Area Management Biologist, Division of Sport Fish 5/18/17
Date



Eric Coonrad, Area Management Biologist, Division of Commercial Fisheries 5/18/17
Date



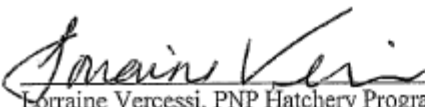
Judy Luhn, Regional Supervisor, Division of Sport Fish 5.8.2017
Date



Lowell Fair, Regional Supervisor, Division of Commercial Fisheries 5/18/17
Date



Flip Pryor, Regional Resource Development Biologist,
Division of Commercial Fisheries 5/18/17
Date



Lorraine Vercesi, PNP Hatchery Program Coordinator,
Division of Commercial Fisheries 5/22/17
Date

Approval:

The 2017 Port Armstrong Hatchery Annual Management Plan is hereby approved:



Tom Taube, Deputy Director, Division of Sport Fish 5/22/2017
Date



Peter Bangs, Assistant Director, Division of Commercial Fisheries 5/30/2017
Date

APPENDICES

- Maps:
 - Figure 1.** Location of Port Armstrong (SHA) in Southeast Alaska.
- Historic production tables:
 - Table 1.** Projected returns for the 2017 season.
 - Table 2.** Pink salmon egg take, release, and survival data for Port Armstrong Hatchery.
 - Table 3.** Coho salmon egg take, release, and survival data for Port Armstrong Hatchery.
 - Table 4.** King salmon egg take, release, and survival data for Port Armstrong Hatchery.
 - Table 5.** Chum salmon egg take, release, and survival data for Port Armstrong Hatchery.
 - Table 6.** Production summary.

Port Armstrong SHA

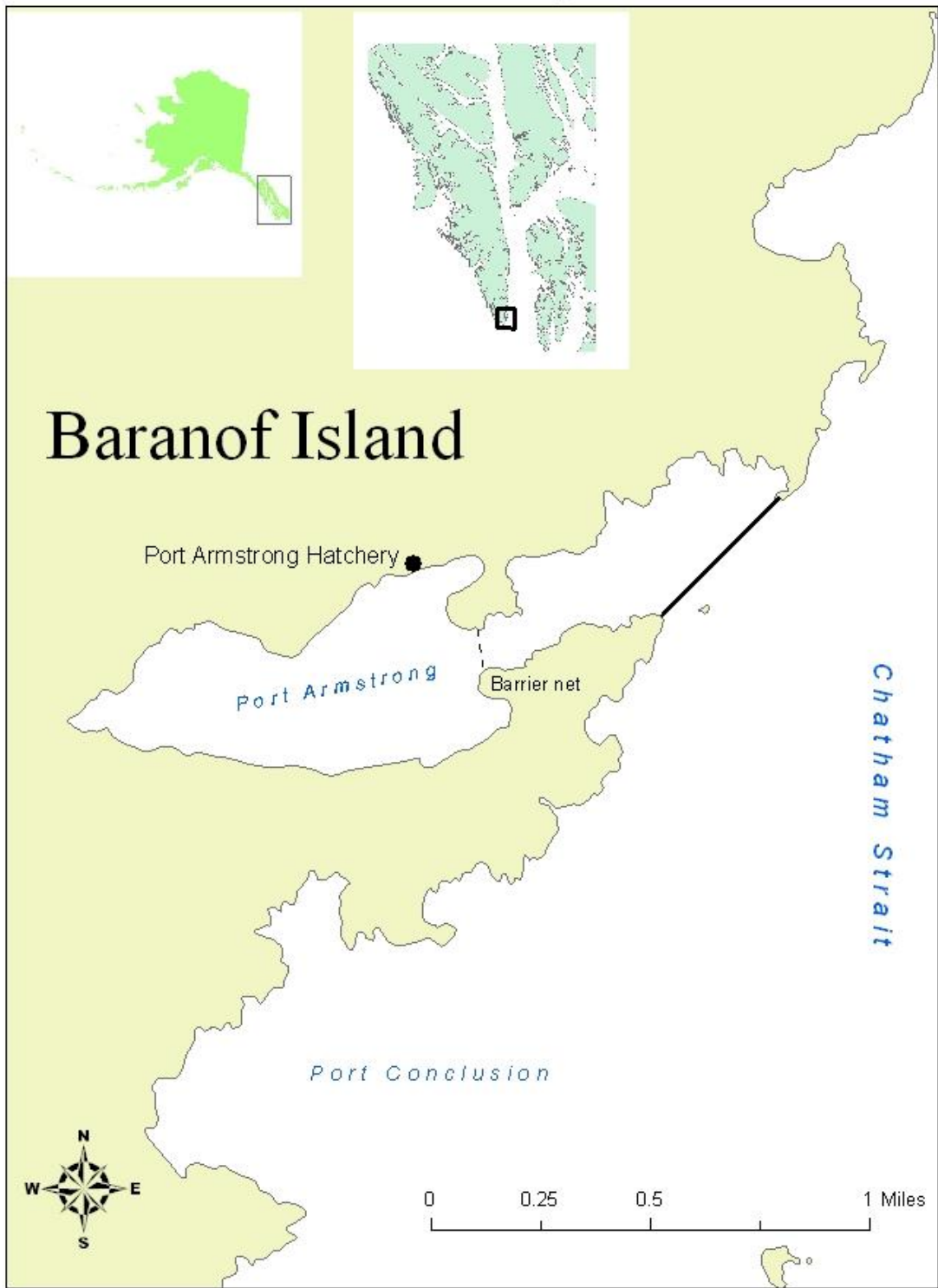


Figure 1.—Location of Port Armstrong SHA in Southeast Alaska.

Table 1. AKI projected returns for the 2017 season.

Species	Brood Year	Age	Fry/Smolt Released	Est. Marine Survival %	Percent at Age	Estd. Return	Estd. CP Harvest	Estd. Brood Stock	Estd. Cost Recovery
Pink	2015	2	97,116,922	1.5%	100%	1,456,754	670,107 46%	187,500	599,147
Coho	2014	3	2,192,592	7.0%	100%	153,481	76,741 50%	6,000	70,741
Chinook	2010 -14	3-7		1.25%		1640	492 30%	None	1,148
Chum	2011	6	26,549,338	1.5%	1%	3,968	397		
	2012	5	25,695,046	1.5%	31%	119,482	11,948		
	2013	4	25,028,988	1.5%	65%	244,033	24,403		
	2014	3	22,817,058	1.5%	3%	10,268	1027		
TOTAL			81,945,211			377,751	37,775 10.0%	60,000	279,976

Table 2.—Pink salmon: egg take, release, and survival data for Port Armstrong Hatchery.

Brood		Eggs	Fry	% Fry	Size	Release	Adult Return	% Return	Total Adult Return	% Marine	Return
Year	Origin	Taken	Released	Survival	Gram	Dates	To Hatchery	To Hatchery		Survival	Year
1983	Sashin Creek	2,900,000									
1983	Lovers Cove	6,100,000	7,400,000	82.2%	0.23	3/5-4/12/84	74,000	1.00%	148,000	2.00%	1985
1984	Sashin Creek	2,800,000									
1984	Lovers Cove	8,400,000	7,500,000	67.0%	0.30	1985/4/29-5/23	30,098	0.40%	60,196	0.80%	1986
1985	Port Armstrong	13,630,000	9,676,000	71.0%	0.40	1986/5/1-7	275,976	2.85%	289,775	2.99%	1987
1986	Port Armstrong	14,520,000	12,350,000	85.1%	0.39	1987/4/15-25	24,061	0.19%	28,256	0.23%	1988
1987	Port Armstrong	20,940,000	19,370,000	92.5%	0.32	1988/4/18-24	75,066	0.39%	125,115	0.65%	1989
1988	Port Armstrong	17,150,000	16,040,000	93.5%	0.36	1989/4/24-29	903,378	5.63%	1,113,413	6.94%	1990
1989	Port Armstrong	24,000,000	22,420,000	93.4%	0.38	1990/4/28-5/1	1,097,622	4.90%	1,393,752	6.22%	1991
1990	Port Armstrong	53,710,000	50,116,000	93.3%	0.34	1991/5/5-15	2,041,595	4.07%	2,722,127	5.43%	1992
1991	Port Armstrong	41,849,000	39,616,000	94.7%	0.45	1992/5/2-6	358,967	0.91%	478,623	1.21%	1993
1992	Port Armstrong	58,108,000	51,189,000	88.1%	0.31	1993/4/27-5/5	1,260,758	2.46%	1,760,758	3.44%	1994
1993	Port Armstrong	58,668,000	43,000,000	73.3%	0.30	1994/4/26-5/4	843,954	1.96%	1,343,954	3.13%	1995
1994	Port Armstrong	59,416,000	53,839,000	90.6%	0.31	1995/4/24-5/3	1,266,381	2.35%	2,110,635	3.92%	1996
1995	Port Armstrong	81,360,000	72,480,000	91.0%	0.31	1996/4/27-5/7	1,246,342	1.72%	1,821,342	2.51%	1997
1996	Port Armstrong	91,286,000	81,012,000	88.7%	0.32	1997/4/25 - 5/10	1,426,978	1.76%	2,212,708	2.73%	1998
1997	Port Armstrong	80,071,739	75,776,850	94.6%	0.70	1998/3/31-4/27	3,522,588	4.65%	4,327,788	5.71%	1999
1998	Port Armstrong	86,619,007	73,269,304	84.6%	0.45	1999/4/26 - 6/7	204,618	0.28%	304,618	0.42%	2000
1999	Port Armstrong	89,082,366	85,638,750	96.1%	0.63	2000/4/24 - 5/8	1,362,561	1.59%	2,452,610	2.90%	2001
2000	Port Armstrong	52,992,615	52,343,525	96.0%	0.94	2001/4/20-6/4	1,104,959	2.10%	1,988,926	3.80%	2002
2001	Port Armstrong	78,906,537	72,663,780	92.1%	0.67	2002/5/1-6/12	598,569	0.82%	1,077,424	1.48%	2003
2002	Port Armstrong	90,366,055	83,470,980	92.4%	0.78	2003/4/24-5-29	1,184,027	1.42%	1,691,465	2.03%	2004
2003	Port Armstrong	89,675,516	83,835,050	93.5%	0.76	2004/4/21 - 6/2	1,015,299	1.21%	1,786,926	2.13%	2005
2004	Port Armstrong	88,040,126	80,110,972	91.0%	0.78	2005/4/28 - 5/31	356,371	0.44%	636,377	0.79%	2006
2005	Port Armstrong	87,610,268	78,172,288	89.2%	1.12	2006/5/27 - 6/1	672,207	0.86%	1,209,973	1.55%	2007
2006	Port Armstrong	85,617,687	78,211,021	91.3%	0.60	2007/6/2 - 6/7	52,113	0.07%	93,803	0.12%	2008
2007	Port Armstrong	64,478,274	61,734,194	95.7%	0.75	2008/5/20 - 5/28	793,488	1.29%	1,428,278	2.31%	2009
2008	Port Armstrong	23,204,712	21,438,507	92.4%	0.64	2009/5/6	759,488	3.54%	1,240,699	5.79%	2010
2009	Port Armstrong	59,858,384	53,677,075	89.2%	0.49	2010/4/29	658,638	1.23%	1,176,351	2.19%	2011
2010	Port Armstrong	85,090,195	75,506,078	88.7%	0.48	2011/5/3-5/7	163,538	0.22%	292,032	0.39%	2012
2011	Port Armstrong	85,870,462	82,734,292	96.3%	0.52	2012/5/1-2	1,086,035	1.31%	2,204,708	2.66%	2013
2012	Port Armstrong	53,598,205	52,120,334	97.2%	0.65	2013/ 4/25 - 5/4	310,959	0.60%	403,843	0.77%	2014
2013	Port Armstrong	87,840,626	79,659,097	90.7%	0.46	2014/4/18-5/7	451,741	0.51%	721,612	0.82%	2015
2014	Port Armstrong	93,185,785	87,664,878	94.1%	.5-.97	2015/4/20 - 5/6	151,347	0.17%	280,272	0.32%	2016
2015	Port Armstrong	103,883,660	97,116,922	93.5%	.61-.99	2016/ 4/13-4/19					

Table 2. Continued – Pink salmon: egg take, release, and survival data for Port Armstrong Hatchery.

Brood		Eggs	Fry	% Fry	Size	Release	Adult Return	% Return	Total	% Marine	Return
Year	Origin	Taken	Released	Survival	Gram	Dates	To Hatchery	To Hatchery	Adult	Survival	Year
									Return		
2016	Port Armstrong	56,590,473									

Table 3.–Coho salmon: egg take, release and survival data for Port Armstrong Hatchery, 1988–2011.

Brood	Eggs	Smolt	Smolt	Size	Release	Return	Marine	Adult	Return	
Year	Origin	Taken	Released	Survival	Gram	Dates	Age	Survival	Return	Year
1988	Blanchard Lake	140,000	121,730	86.95%	24.3	5/16/1990	2	2.01%	2,442	1990
	(Deep Cove)						3	22.25%	27,090	1991
1989	Deer Lake (Sashin)	280,000	206,724	73.83%	19.6	5/25-26/1991	2	0.24%	488	1991
							3	19.42%	40,140	1992
1990	Deer Lake (Sashin)	230,180	164,766	71.58%	18.5	5/17-18/1992	2	0.06%	100	1992
							3	6.98%	11,493	1993
1991	Deer Lake ¹	613,504	81,673	13.31%	17.2	5/23/1993	2	0.00%	-	1993
	(Deep Cove)						3	4.66%	3,805	1994
1992	Deer Lake (Sashin)	893,000	828,199	92.74%	18.4	5/20-30/1994	2	0.04%	312	1994
							3	10.42%	86,244	1995
1993	PAH	663,000	457,281	68.97%	17.6	5/28-29/1995	2	0.00%	15	1995
	Hidden Falls	217,000	184,525	85.03%	15.5	5/28/1995	3	5.05%	32,443	1996
							4	0.02%	97	1997
1994	PAH	1,098,000	751,566	68.45%	20.8	6/2/1996	2	0.00%	-	1996
	Hidden Falls	703,333	633,203	90.03%	18.7	5/31/1996	3	5.52%	76,488	1997
1995	PAH	1,830,000	952,000	52.02%	19.7	5/19-6/6/1997	2	0.16%	1,500	1997
							3	3.55%	33,801	1998
1996	PAH	1,853,000	123,850	35.11%	21.4	5/23/1998	2	0.00%	-	1998
							3	16.35%	20,244	1999
1997	PAH	748,779	625,363	83.52%	22.6	5/19-26/1999	2	0.00%	-	1999
							3	3.13%	19,589	2000
1998	PAH	1,585,368	1,358,299	85.68%	22.9	5/15-28/2000	2	1.84%	25,000	2000
							3	14.99%	203,619	2001
1999	Hidden Falls	1,400,000	975,549	83.83%	24.2	5/22-23/2001	2	0.38%	3,690	2001
							3	23.20%	226,409	2002
2000	Hidden Falls	1,775,298	1,468,761	82.70%	21.5	5/24-31/2002	2	0.05%	700	2002
							3	4.52%	66,355	2003
2001	PAH	1,861,605	1,331,351	71.52%	22.2	5/30/2003	2	0.00%	-	2003
							3	2.61%	34,724	2004
2002	PAH	1,576,659	1,340,985	70.51%	27.3	6/3-4/2004	2	0.00%	-	2004
	Hidden Falls	325,171					3	1.45%	19,444	2005
2003	PAH	2,338,298	1,581,050	67.62%	26.7	6/9/2005	2	0.00%	-	2005
							3	2.29%	36,238	2006
2004	PAH	1,287,880	2,616,063	86.21%	19.3	6/8/2006	2	0.06%	1,666	2006
	Hidden Falls	1,746,625					3	5.56%	145,393	2007
2005	PAH	2,933,857	2,156,500	73.50%	20.7	6/15/2007	2	0.03%	751	2007
							3	2.74%	59,038	2008
2006	PAH	3,296,075	2,509,128	76.12%	18.9	6/5/2008	2	0.10%	2,572	2008
							3	4.51%	113,254	2009
2007	PAH	3,702,400	3,148,462	85.04%	15.0	5/28/2009	2	0.01%	217	2009
							3	3.92%	123,552	2010
2008	PAH	4,287,737	3,223,867	75.19%	16.5	5/8&27/2010	2	0.03%	1,031	2010
							3	4.61%	148,756	2011
2009	PAH	3,494,400	2,274,860	65.10%	19.5	5/15-27/2011	2	0.03%	695	2011
							3	2.56%	58,332	2012
2010	PAH	2,421,000	2,380,474	85.28%	19.6	5/18-28/2012	2	0.02%	477	2012
							3	5.71%	135,869	2013
2011	PAH	2,499,209	2,243,392	89.76%	23.6	5/19-27/2013	2	0.04%	788	2013
							3	9.71%	250,555	2014

Table 3 (continued) .-Coho salmon: egg take, release and survival data for Port Armstrong Hatchery, 2012–2015.

Brood		Eggs	Smolt	Smolt	Size	Release	Return	Marine	Adult	Return
Year	Origin	Taken	Released	Survival	Gram	Dates	Age	Survival	Return	Year
2012	PAH	3,010,994	2,466,514	81.9%	24.4	2014	2	0.16%	3,701	2014
							3	9.07%	223,802	2015
2013	PAH	2,358,046	1,944,904	82.5%	24.5	2015	2	1.07%	20,740	2015
							3	5.3%	103,141	2016
2014	PAH	2,911,992	2,192,592	75.3%	29-36	2016	2	1.01%	22,236	2016
							3			2017
2015	PAH	2,664,632				2017	2			2017
		4,684,800								2018
2016	PAH									2019

Table 4a.–King salmon: egg take, release, and survival data for Port Armstrong Hatchery, 1985–2000.

Brood		Eggs	Fry	% Fry	Size	Release	Age at	%	Adult	Return
Year	Origin	Taken	Released	Survival	Gram	Dates	Return	Survival	Return	Year
1985	Sashin (Unuk)	n/a	69,949	n/a	24.13	6/3/1987	2(minijack)	0.21%	150	1987
							3(jack)	0.42%	295	1988
							4	0.50%	351	1989
							5	1.50%	1051	1990
							6	1.28%	896	1991
							BY85 TOTAL	3.92%	2743	
1986	Sashin (Unuk)	80,000	75,602	94.5%	6.21	7/2/1987	n/a	0.00%	0	
							BY86 TOTAL	0.00%	0	
1987	Sashin (Unuk)	130,000	89,942	69.2%	35.04	5/18/1989	2(minijack)	2.97%	2667	1989
							3(jack)	0.29%	264	1990
							4	0.20%	180	1991
							5	0.68%	615	1992
							6	1.33%	1192	1993
							BY87 TOTAL	5.47%	4918	
1988	Sashin (Unuk)	166,000	144,323	86.9%	38.72	5/16/1990	2(minijack)	0.24%	340	1990
							3(jack)	0.08%	121	1991
							4	0.06%	88	1992
							5	0.40%	584	1993
							6	0.19%	275	1994
							BY88 TOTAL	0.98%	1408	
1989	Sashin (Unuk)	154,588	62,176	40.2%	40.25	5/26-27/1991	2(minijack)	0.19%	120	1991
							3(jack)	0.16%	100	1992
							4	0.27%	170	1993
							5	0.29%	181	1994
							6	0.08%	48	1995
							BY89 TOTAL	1.00%	619	
1990	Sashin (Unuk), PAH Snettisham Smolt	160,316	88,964	55.5%	25.60	5/26/1992	2(minijack)	0.00%	0	1992
		n/a	306,701	n/a	10.50	6/11/1992	3(jack)	0.10%	413	1993
			395,665				4	0.19%	734	1994
							5	0.08%	315	1995
							6	0.10%	398	1996
		BY90 TOTAL					0.47%	1860		
1991	Sashin (Unuk), PAH ¹ Snettisham Smolt	32,000	-	0.0%	-	1/1/1994	2(minijack)	0.00%	0	1993
			1,275,041	n/a	8.87	6/9/1993	3(jack)	0.00%	0	1994
							4	0.05%	594	1995
							5	0.00%	0	1996
							6	0.00%	0	1997
			BY91 TOTAL					0.05%	594	
1992- 2000	No Eggs Taken		-		-					

¹ BY 91 PAH smolt lost due to pipeline failure.

Table 4b.–King salmon: egg take, release, and survival data for Port Armstrong Hatchery, 2001–2006.

Brood	Eggs	Fry	% Fry	Size	Release	Age at	% Marine	Adult	Return					
Year	Origin	Taken	Released	Survival	Gram	Dates	Return	Survival	Return	Year				
2001	Sashin (Unuk) Little Port Walter	181,228	106,756	58.9%	31.68	5/20/2003	2 (minijack)	0.00%	0	2003				
							3 (jack)	1.12%	1,200	2004				
							4 yr old	1.55%	1,656	2005				
							5 yr old	1.54%	1,644	2006				
							6 yr old	0.26%	277	2007				
							BY01 TOTAL	4.47%	4,777					
							2002	Sashin (Unuk) Little Port Walter	172,915	96,285	55.7%	44.81	5/8/2004	2 (minijack)
3 (jack)	0.01%	8	2005											
4 yr old	0.05%	45	2006											
5 yr old	0.90%	862	2007											
6 yr old	0.06%	60	2008											
BY02 TOTAL	1.10%	1,058												
2003	Sashin (Unuk) Little Port Walter	240,465	83,479	34.7%	52.83	5/21/2005								2 (minijack)
							3 (jack)	0.07%	57	2006				
							4 yr old	0.31%	262	2007				
							5 yr old	0.35%	291	2008				
							6 yr old	0.20%	169	2009				
							BY03 TOTAL	0.93%	779					
							2004	Sashin (Unuk) Little Port Walter	907,633	273,788	30.2%	42.00	5/5/2006	2 (minijack)
3 (jack)	0.01%	20	2007											
4 yr old	0.03%	75	2008											
5 yr old	0.12%	337	2009											
6 yr old	0.01%	34	2010											
BY04 TOTAL	0.18%	484												
2005	Sashin (Unuk) Little Port Walter	215,440	148,631	69.0%	44.20	5/7/2007								2 (minijack)
							3 (jack)	0.41%	608	2008				
							4 yr old	0.79%	1,180	2009				
							5 yr old	1.43%	2,125	2010				
							6 yr old	0.00%	0	2011				
							Average:	141,788						
		BY05 TOTAL	2.71%	4,024										
2006	Sashin (Unuk) Port Armstrong -0 check	1,352,379	938,557	69.4%	4.30	6/25/2007	0 ocean (zeromini)	0.00%	0	2007				
							1 ocean (zerojack)	0.00%	0	2008				
							2 ocean zero	0.00%	0	2009				
							3 ocean zero	0.00%	0	2010				
							4 ocean zero	0.00%	0	2011				
							0 check total	0.00%	0					
							Port Armstrong -1 check	275,251	28.97	5/5/2008	2 (minijack)	0.19%	523	2008
											3 (jack)	0.22%	597	2009
											4 yr old	0.74%	2,046	2010
											5 yr old	1.16%	3,192	2011
											6 yr old	0.08%	213	2012
											1 check total	2.39%	6,571	
							BY06 TOTAL	0.70%	6,571					

Table 4c.–King salmon: egg take, release, and survival data for Port Armstrong Hatchery, 2007–2010.

Brood Year	Origin	Eggs Taken	Fry Released	% Fry Survival	Size Gram	Release Dates	Age at Return	% Marine Survival	Adult Return	Return Year
2007	Sashin (Unuk)	844,492	<u>606,070</u>	71.8%	7.03	6/9/2008	0 ocean (mini)	0.00%	0	2008
		Port Armstrong -0 check	483,053				1 ocean (jack)	0.00%	0	2009
	Port Armstrong -1 check	123,017	30.7	5/2/2009	2 ocean zero	0.00%	0	2010		
					3 ocean zero	0.03%	132	2011		
					4 ocean zero	0.01%	70	2012		
					0 check total	0.04%	202			
					2 (minijack)	0.17%	208	2009		
					3 (jack)	0.31%	384	2010		
					4 yr old	0.42%	520	2011		
					5 yr old	0.33%	407	2012		
					6 yr old	0.02%	30	2013		
					1 check total	1.26%	1,549			
	BY07 TOTAL	0.29%	1,751							
	2008	Sashin (Unuk)	973,421	<u>555,988</u>	57.1%	8.35	6/3/2009	0 ocean (mini)	0.00%	0
Port Armstrong -0 check			429,612		1 ocean (jack)			0.00%	16	2010
Port Armstrong -1 check		126,376	50.2	5/8/2010	2 ocean zero	0.00%	20	2011		
					3 ocean zero	0.07%	286	2012		
					4 ocean zero	0.02%	95	2013		
					0 check total	0.10%	417			
					2 (minijack)	0.49%	620	2010		
					3 (jack)	0.07%	92	2011		
					4 yr old	0.47%	594	2012		
					5 yr old	0.39%	494	2013		
					6 yr old	0.04%	52	2014		
					1 check total	1.46%	1,852			
BY08 TOTAL		0.41%	2,269							
2009		Sashin (Unuk)	734,201	<u>279,702</u>	38.1%	13.1	5/17/2010	0 ocean (mini)	0.00%	0
	Port Armstrong -0 check		149,722		1 ocean (jack)			0.02%	31	2011
	Port Armstrong -1 check	129,980	44.0	5/15/2011	2 ocean zero	0.23%	344	2012		
					3 ocean zero	0.67%	997	2013		
					4 ocean zero	0.12%	182	2014		
					0 check total	1.04%	1,554			
					2 (minijack)	0.08%	102	2011		
					3 (jack)	0.07%	88	2012		
					4 yr old	0.20%	262	2013		
					5 yr old	0.36%	462	2014		
					6 yr old	0.00%	6	2015		
					1 check total	0.35%	920			
	BY09 TOTAL	0.71%	1,824							
	2010	Sashin (Unuk)	833,753	<u>273,553</u>	32.8%	16.05	5/15/2011	0 ocean (mini)	0.03%	34
Port Armstrong -0 check			120,458		1 ocean (jack)			0.01%	10	2012
Port Armstrong -1 check		153,095	53.00	5/18/2012	2 ocean zero	0.08%	94	2013		
					3 ocean zero	0.12%	140	2014		
					4 ocean zero	0.03%	35	2015		
					0 check total	0.26%	313			
					2 (minijack)	0.11%	172	2012		
					3 (jack)	0.08%	123	2013		
					4 yr old	0.25%	384	2014		
					5 yr old	0.32%	488	2015		
					6 yr old	0.00%		2016		
					1 check total	0.19%	295			
BY10 TOTAL		0.16%	433							

Table 5a.—Chum salmon: egg take, release, and survival data for Port Armstrong Hatchery, 1984–2002.

Brood Year	Origin	Eggs Taken	Fry Released	% Fry Survival	Size Gram	Release Dates	Age at Return	% Marine Survival	Adult Return	Return Year							
1984	Security Bay	1,236,400	702,540	56.8%	0.80	6/18 - 21/1985	3	0.000%	0	1987							
		703,000	223,000	31.7%	1.00		4	0.010%	90	1988							
	1,939,400		925,540	47.7%			5	0.000%	2	1989							
	BY84 TOTAL								0.010%	92							
1985	Security Bay	2,702,250	1,626,400	60.2%	0.84	5/19-6/9/1986	3	0.002%	27	1988							
							4	0.003%	46	1989							
							5	0.000%	0	1990							
							BY85 TOTAL								0.004%	73	
1986	Security Bay	2,171,103	1,982,450	91.3%	1.05	6/1/1987	3	0.006%	128	1989							
							4	0.018%	363	1990							
							5	0.000%	0	1991							
							BY86 TOTAL								0.025%	491	
1987	Security Bay	1,506,500	1,287,060	85.4%	0.90	4/24/1988	3	0.065%	839	1990							
							4	0.031%	396	1991							
							5	0.000%	0	1992							
							BY87 TOTAL								0.096%	1235	
1988	Port Armstrong	46,571	42,500	91.3%	0.67	4/24-30/1989	3	2.172%	923	1991							
							4	0.296%	126	1992							
							5	0.000%	0	1993							
							BY88 TOTAL								2.468%	1049	
1989	Port Armstrong	157,303	141,921	90.2%	0.56	5/1/1990	3	0.282%	400	1992							
							4	0.000%	0	1993							
							5	0.000%	0	1994							
							BY89 TOTAL								0.282%	400	
1990	Port Armstrong	855,167	794,673	92.9%	0.51	5/5-15/1991	3	0.000%	0	1993							
							4	0.000%	0	1994							
							5	0.000%	0	1995							
							BY90 TOTAL								0.000%	0	
1991	Port Armstrong	444,453	423,000	95.2%	0.52	5/4/1992	3	0.000%	0	1994							
							4	0.000%	0	1995							
							5	0.000%	0	1996							
							BY91 TOTAL								0.000%	0	
1992-02	no eggs taken	-	-		-		BY91 TOTAL								0.000%	0	

Table 5b.—Chum salmon: egg take, release, and survival data for Port Armstrong Hatchery, 2003–2012.

Brood Year	Origin	Eggs Taken	Fry Released	% Fry Survival	Size Gram	Release Dates	Age at Return	% Marine Survival	Adult Return	Return Year
2003	Hidden Falls	10,000,826	9,306,909	93.1%	1.62	2004/5/30	3	0.06%	7,561	2006
	Gunnuk Creek	5,535,655	4,098,640	74.0%	1.99	2004/4/21	4	0.28%	37,471	2007
	TOTAL	15,536,481	13,405,549	86.3%	1.73		5	0.05%	7,098	2008
							6	0.01%	1,254	2009
							BY03 TOTAL	0.40%	53,384	
2004	Hidden Falls	12,914,888	574,958	4.5%	2.19	2005/5/31	3	0.05%	287	2007
							4	0.14%	799	2008
							5	1.09%	6,266	2009
							6	0.00%	0	2010
							BY04 TOTAL	1.28%	7,352	
2005	Hidden Falls	2,716,112	2,110,821	77.7%	2.93	2006/6/1	3	0.27%	10,294	2008
	Gunnuk Creek	1,911,488	1,770,390	92.6%	3.86	2006/5/15	4	2.91%	112,780	2009
	TOTAL	4,627,600	3,881,211	83.9%	3.35		5	0.21%	8,205	2010
							6	0.02%	719	2011
							BY05 TOTAL	3.40%	131,998	
2006	Hidden Falls	13,300,064	11,875,417	89.3%	1.59	2007/6/2-7	3	0.03%	5,012	2009
	Port Armstrong	5,049,447	4,654,882	92.2%	1.77	2007/6/7	4	0.18%	31,905	2010
	Gunnuk Creek	940,933	917,949	97.6%	3.27	2007/5/24	5	0.57%	100,239	2011
	TOTAL	19,290,444	17,448,248	90.5%			6	0.01%	2,414	2012
							BY06 TOTAL	0.80%	139,570	
2007	Port Armstrong	15,348,631	13,786,610	89.8%	2.14	2008/5/28	3	0.24%	33,501	2010
							4	1.20%	166,072	2011
							5	0.27%	37,767	2012
							6	0.00%	587	2013
							BY07 TOTAL	1.73%	237,927	
2008	Port Armstrong	13,104,587	12,417,244	94.8%	1.20	2009/5/7	3	0.06%	6,904	2011
							4	1.01%	125,202	2012
							5	0.31%	38,174	2013
							6	0.00%	363	2014
							BY08 TOTAL	1.37%	170,643	
2009	Port Armstrong	30,019,963	27,296,476	90.9%	1.21	2010/4/27	3	0.03%	7,071	2012
							4	0.47%	128,029	2013
							5	0.14%	38,070	2014
							6	0.00%	762	2015
							BY09 TOTAL	0.64%	173,932	
2010	Port Armstrong	30,479,861	28,444,881	93.3%	1.34	2011/5/7	3	0.01%	3,524	2013
							4	0.08%	23,930	2014
							5	0.08%	23,627	2015
							6	0.00%		2016
							BY10 TOTAL	0.18%	51,081	
2011	Port Armstrong	30,139,827	26,459,338	87.8%	1.91	2012/5/1-4	3	0.04%	10,152	2014
							4	0.19%	49,541	2015
							5	0.00%		2016
							6	0.00%		2017
							BY11 TOTAL	0.23%	59,693	
2012	Port Armstrong	29,620,820	25,695,046	86.7%	1.78	2013/ 4/25-5/4	3	0.01%	2,286	2015
							4	0.00%		2016
							5	0.00%		2017
							6	0.00%		2018
							BY12 TOTAL	0.01%	2,286	

Table 6– Production Summary

**Production Summary
Port Armstrong Hatchery**

Species & Run	Current Year																							
	2016					2017					2018													
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
king salmon (Unuk River stock)	BY 2016																							
	E										T													
	0										30k													
											Port Armstrong													
king salmon (Unuk River stock)	BY 2016																							
						E					T R													
						0					0 0													
						Port Armstrong					Port Armstrong													
chum salmon	E TM					R					E TM													
	28M 28M					27M					60M 60M													
	Port Armstrong					Port Armstrong					Port Armstrong													
											Port Lucy R													
											0 R													
											60M													
											Port Armstrong													
pink salmon	E TM					R					E TM													
	56M 56M					55M					105M 105M													
	Port Armstrong					Port Armstrong					Port Armstrong													
											Port Herbert R													
											40M R													
											60M													
											Port Armstrong													
coho salmon (Deep Cove/Sashin Stock)	BY 2015					T					R													
						86.5k					2.1M													
											Port Armstrong													
coho salmon (Deep Cove/Sashin Stock)	BY 2016					E					T													
						4.7M					86.5k													
						Port Armstrong					Port Armstrong													
											R													
											4.0M													
											Port Armstrong													
coho salmon (Deep Cove/Sashin Stock)	BY 2017										E													
											5.0M													
											Port Armstrong													

Codes: Egg take Tagging E *number & site* T *number* Release transfers R *number & site* "to ___" thermal marking TM *number*